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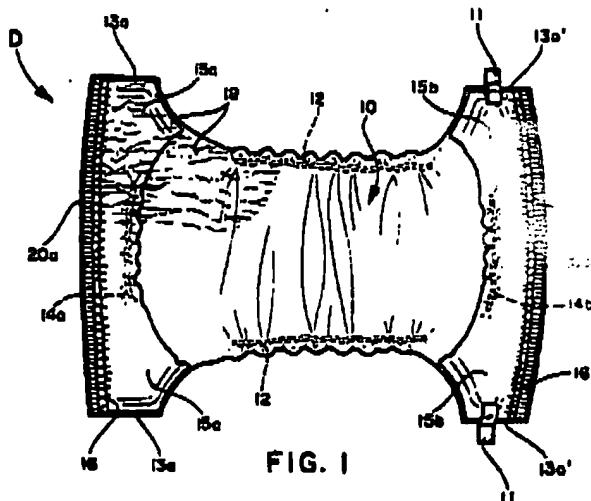
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## (54) Diaper

(57) A unitary diaper includes a front end 20a and a back end 20b, a fluid pervious liner 18, a fluid impervious backing substantially coterminous therewith and an absorbant matrix positioned between said liner and said backing, a crotch portion 10 substantially centrally disposed with respect to said ends, and two parallel elasticized leg portions 12 with each leg portion generally transversely corresponding to and disposed outwardly from said crotch portion, a waist portion formed by a first and a second end of said diaper with fastening means 11 on at least one of said ends for securing about the waist of a wearer when the diaper is worn, at least one of said ends having an inwardly positioned flap 15a, 15b extending along its length.



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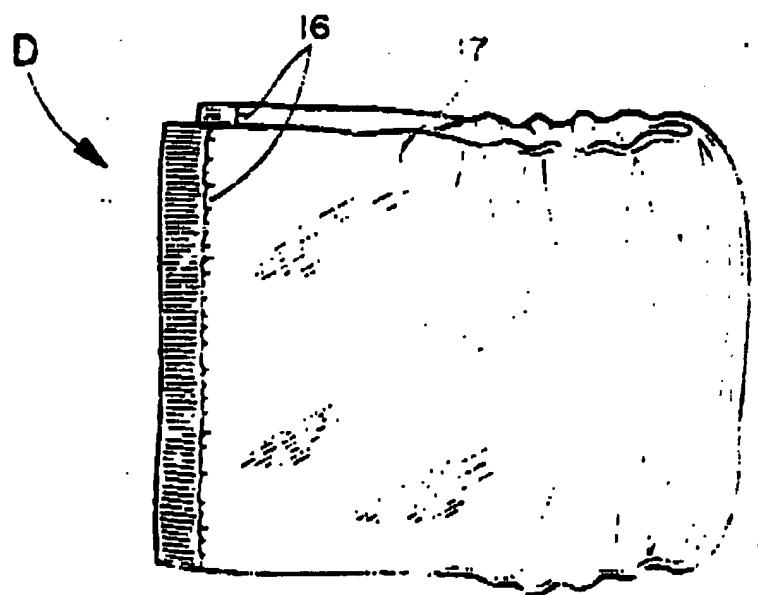
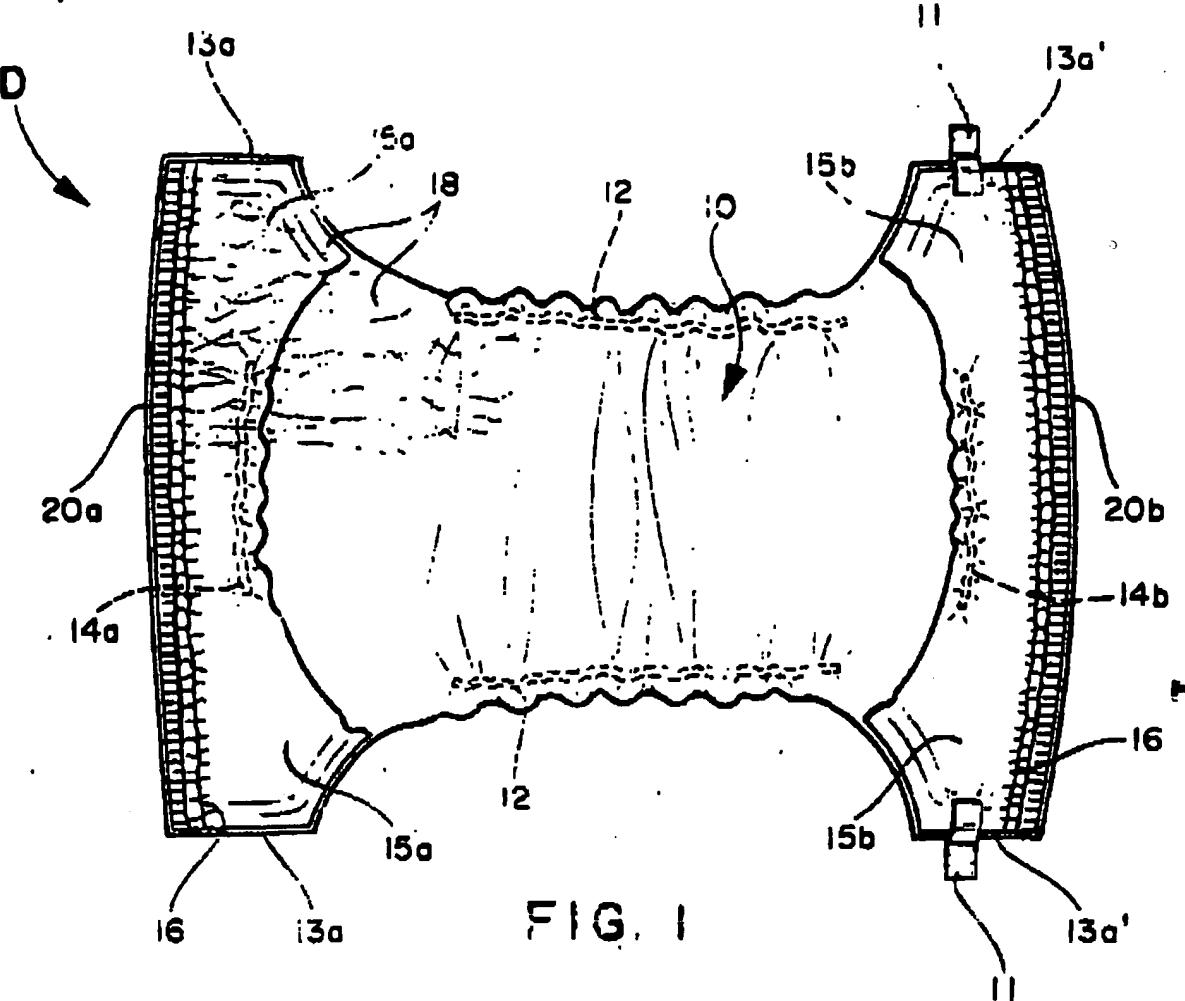


FIG. 2

## SPECIFICATION

## Diaper

5 This specification relates to a diaper and particularly to a diaper having a containment flap.

Disposable diapers have become increasingly popular in recent years and have incorporated many features which enhance both comfort and function.

10 Elastic leg diapers have become popular because the use of elastic around the legs of a baby tend to prevent urine and feces leakage in that area.

Babies, and particularly young infants, often have extremely loose explosive bowel movements which

15 while substantially contained at the edge due to the force and volume, as well as the liquidity of consistency can run over both the front and back portions of the waist of the diaper. The introduction of elastic in the waist area will generally inhibit the leakage over the

20 ends of the diaper, however, due to the necessity for maintaining the comfort of the baby elastic which is designed to fit more loosely is used. The gathers in the diaper liner formed by the elastic can, because of the loose fit when compared to the legs, provide channels

25 for fecal escape.

The concept of utilizing waist elastic is disclosed e.g. in U.S. Patents 3,990,450 and 3,951,150. In the rather complicated constructions depicted in these two patents, the constrictive elastic means are attached in

30 a bow-shaped extended figure 8 configuration and a flap is formed by folding over the extended waist ends of the diaper. U.S. Patent 3,930,501, while not disclosing an elasticized waist also has a flap at the ends of the diaper forming the waist portion. In each of these

35 prior art patents the flap is formed by folding the extended ends of the diaper which would conventionally form the waist portion over on itself so that the nonporous fluid impermeable baffle produces a non-porous plastic surface in contact with the baby's

40 waist area. This will quite obviously produce discomfort in the form of abrasive chafing or moisture derived skin irritation.

Viewed from one aspect there is disclosed herein a unitary diaper including a front end and a back end, a

45 fluid pervious liner, a fluid impervious backing substantially coterminous therewith and an absorbent matrix positioned between said liner and said backing, a crotch portion substantially centrally disposed with respect to said ends, and two parallel elasticized leg

50 portions with each leg portion generally transversely corresponding to and disposed outwardly from said crotch portion, a waist portion formed by a first and a second end of said diaper with fastening means on at least one of said ends for securement about the waist

55 of a wearer when the diaper is worn, at least one of said ends having an inwardly positioned flap extending along its length.

In use of a preferred embodiment the inwardly positioned flap forms a waste containment pocket. In

60 one embodiment, fluid permeable material is used and the pocket is primarily directed toward fecal containment. The fluid permeable material allows for the dissipation of moisture either from perspiration or urine and provides the soft finish associated with the

65 diaper liner which is in contact with the wearer's skin

In other areas of the diaper.

In a preferred embodiment, the flap extends downward toward the crotch area of the diaper from the end portion and is elasticized near the bottom most edge of the downward extending portion. In a particularly preferred embodiment, the flap is positioned at each end of the diaper which forms the waist with constrictive means present near the bottom portion of each flap. This combination provides for waste

70 containment generally completely around the waist area and also for increased conformity to the baby due in part to the presence of elastic both in the front and rear portions.

The diaper is preferably for use on a baby or small infant.

A specific embodiment of this disclosure will now be described with reference to the drawings in which Fig. 1 is a plan view of the currently preferred embodiment which is open prior to use and Fig. 2 is a plan view of the diaper in its folded configuration.

The diaper D has a fluid impervious backing 17 which, as shown in Fig. 2, is designed to be positioned on the diaper's exterior portion. A fluid pervious liner 18 is adjacent to the baby's skin as can be seen by reference to Fig. 1. An absorbent batt (not shown) is positioned between the liner and the backing. The diaper D has a crotch area 10 which preferably has added absorbent. The crotch area 10 is bordered on either side by elastic 12 which defines a leg area so that when the diaper is worn by the baby a complete ring of elastic is formed around the baby's legs. When the diaper is worn it is folded in the crotch area and attached at the waist area formed by diaper ends 20a and 20b by means of tab 11 as is well known in the art.

100 In the particular, currently preferred embodiment depicted in Fig. 1, flaps 15a and b are attached to the end portions 20a and 20b either by heat sealing or adhesively and extend downward and inward. These flaps, made of conformable fluid pervious material, 105 form the fecal barrier referred to above. According to this embodiment, elastic constrictive means 14a and 14b are centrally disposed near the unattached inward-positioned edge of each of these flaps.

As can be seen in Fig. 1, ear portions 13a and a' 110 extend outward from the waist end portions 20a and 20b on each side so that the diaper D is laid flat and the elastic 14a and b in the waist area is stretched to allow for the flat profile, a rectangle with four essentially symmetrical lobes extending therefrom at each end is

115 formed.

The elastic is generally in at least a partially relaxed state as it extends into each of the ear areas. The flap is preferably coterminous with the outer edges of the ear. The stretchable portion of the elastic present 120 above and below the crotch area is extensible. The resultant profile is one in which the ears tend to extend in a direction normal to the plane of the diaper ends 20a and 20b.

It has been found that as long as the travel of the 125 elastic when stretched is more than two times the length of the distance between the elastic and the seal which joins the flap to the waist end, the ears when folded inward provide a diaper which is essentially un wrinkled in the cross direction. This can be seen by reference to Fig. 2. A barrier seal line 16 can be added

and may in fact be formed by heat sealing of the flap to the diaper end. This barrier line prevents fluid migration from occurring.

The configuration of the diaper provides a soft, resilient surface for a fecal containment flap as well as a convenient way to introduce waist elastic with minimal irritation.

The diaper is preferably a disposable diaper.

Modifications to the specific embodiment described herein and to any broad aspects thereof referred to or suggested herein may be apparent to those skilled in the art and the disclosure hereof is intended to encompass any such modifications. The claims presently appended hereto define those aspect(s) for which protection is being sought for the time being.

#### CLAIMS

1. A unitary diaper including a front end and a back end, a fluid pervious liner, a fluid impervious backing substantially coterminous therewith and an absorbent matrix positioned between said liner and said backing, a crotch portion substantially centrally disposed with respect to said ends, and two parallel elasticized leg portions with each leg portion generally transversely corresponding to and disposed outwardly from said crotch portion, a waist portion formed by a first and a second end of said diaper with fastening means on at least one of said ends for securing about the waist of a wearer when the diaper is worn, at least one of said ends having an inwardly positioned flap extending along its length.
2. A diaper as claimed in claim 1, wherein the flap contains an elastic member which is at least partially stretched when the diaper is worn.
3. A diaper as claimed in claim 1 or 2, wherein the flap is fluid pervious.
4. A diaper as claimed in claim 3, wherein the flap is formed of the same material used in the liner.
5. A diaper as claimed in any preceding claim, wherein a fluid migration barrier strip is positioned transversely on the flap near its joining to the diaper end.
6. A diaper as claimed in any preceding claim, in which at least one of the waist ends has ears projecting from each lateral side.
7. A diaper as claimed in claim 6, wherein the flap is attached to the outer lateral edges of said ears.
8. A diaper as claimed in claim 6 or 7, wherein elastic is attached in at least a partially stretched condition to the portion of said flaps overlying said ears.
9. A diaper as claimed in claim 8, wherein the remainder of the elastic is attached in a relaxed condition causing the ear portions to assume a configuration generally normal to the plane of the diaper end.
10. A diaper as claimed in claim 9, wherein the distance of travel for the relaxed elastic when the diaper ears are positioned in the same plane as the diaper end is at least twice the distance between the flap attachment to the ends and the elastic.
11. A diaper substantially as hereinbefore described with reference to the accompanying drawings.